Appendix B
Ameritech Further Comments
August 3, 1998
CC Docket No. 95-116: Long Term Number Portability

Proper Recovery of Incremental Overheads For Local Number Portability
by
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I. QUALIFICATIONS

My name is Debra J. Aron. I am the Director of the Evanston, Illinois offices of LECG, Inc. My business address is 1603 Orrington Avenue, Suite 2000, Evanston, IL 60201. LECG, Inc. is an economics and finance consulting firm, providing economic expertise for litigation, regulatory proceedings, and business strategy. Our firm comprises more than 200 economists from academe and business, and has 13 offices in six countries. LECG's practice areas include antitrust analysis, intellectual property, and securities litigation, in addition to specialties in the telecommunications, gas, electric, and health care industries.

I received a Ph.D. in economics from the University of Chicago in 1985, where my honors included a Milton Friedman Fund fellowship, a Pew Foundation teaching fellowship, and a Center for the Study of the Economy and the State dissertation fellowship. I was an Assistant Professor of Managerial Economics and Decision Sciences from 1985 to 1992 at the J. L. Kellogg Graduate School of Management, Northwestern University, and a Visiting Assistant Professor of Managerial Economics and Decision Sciences at the Kellogg School from 1993-1995. I was named a National Fellow of the Hoover Institution, a think tank at Stanford University, for the academic year 1992-1993, where I studied innovation and product proliferation in multiproduct firms. Concurrent with my position at Northwestern University, I also held the position of Faculty Research Fellow with the National Bureau of Economic Research from 1987-1990. At the Kellogg School, I have taught M.B.A. and Ph.D. courses in managerial economics, information economics, and the economics and strategy of pricing. I am a member of the American Economic Association and the Econometric Society. My research focuses on multiproduct firms, innovation, incentives, and pricing, and I have published articles on these subjects in several leading academic journals, including the *American Economic Review*, the *RAND Journal of Economics*, and *the Journal of Law, Economics, and Organization*.

I have consulted on numerous occasions to the telecommunications industry on strategic and efficient pricing. I have testified in several states regarding the proper interpretation of Long Run Incremental Cost and its role in pricing; the economic interpretation of pricing and costing standards in the Telecommunications Act of 1996; limitations of liability in telecommunications; Universal Service; and proper pricing for mutual compensation for call termination. I have also submitted an affidavit to the Federal Communications Commission analyzing the merits of Ameritech Michigan's application for authorization under Section 271 of the Telecommunications Act to serve the in-region interLATA market, CC Docket No. 97-137. I have consulted in other industries regarding potential anticompetitive effects of bundled pricing and monopoly leveraging, market definition, and entry conditions, among other antitrust issues, as well as matters related to employee compensation and contracts, and demand estimation. In 1979 and 1980, I worked as a Staff Economist at the Civil Aeronautics Board studying price deregulation of the airline industry. In July 1995, I assumed my current position at LECG. My professional qualifications are detailed in my curriculum vitae, which is attached as Exhibit 1.

II. IT IS VALID AND APPROPRIATE TO RECOVER ALL INCREMENTAL OVERHEADS DIRECTLY ATTRIBUTED TO LNP

In its Third Report and Order ("LNP Cost Recovery Order"), the Commission concluded that it is appropriate to recover incremental costs incurred in the provision of Local Number Portability ("LNP") functionality. Specifically, the Commission says:

> ...Thus, we will consider as subject to the competitive neutrality mandate of section 251(e)(2) all of a carrier's dedicated number portability costs, such as for number portability software and for the SCPs and STPs reserved exclusively for number portability. We will also consider as carrier-specific costs directly related to the provision of number portability that portion of a carrier's joint costs that is demonstrably an incremental cost carriers incur in the provision of long-term number portability. Apportioning costs in this way will further the goals of section 251(e)(2) by recognizing that providing number portability will cause some carriers, including small and rural LECs, to incur costs that they would not ordinarily have incurred in providing telecommunications service.[1]

I understand this passage to mean that carriers may recover carrier-specific costs that are directly related to the provision of local number portability. The Commission recognizes that costs that would not have been incurred in the absence of LNP and which specifically benefit or support LNP are recoverable as part of the LNP monthly charge. In the next paragraph the Commission further validates the view that incremental costs of providing LNP are recoverable while at the same time limiting the means by which some of the incremental costs of LNP can be identified:

> Because carrier-specific costs directly related to providing number portability only include costs carriers incur specifically in the provision of number portability, carriers may not use general overhead loading factors in calculating such costs. Carriers already allocate general overhead costs to their rates for other services, and allowing general overhead loading factors for long-term number portability might lead to double recovery. [Footnote omitted.] Instead, carriers may identify as carrier-specific costs directly related to providing long-term number portability only those incremental overheads that they can demonstrate they incurred specifically in the provision of long-term number portability.[2]

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1 Federal Communications Commission, *In the Matter of Telephone Number Portability, Third Report and Order*, CC Docket No. 95-116. May 12. 1998, ¶ 73.

2 Federal Communications Commission, *In the Matter of Telephone Number Portability, Third Report and Order*, CC Docket No. 95-116. May 12. 1998, ¶ 74.

In this paragraph, the Commission explicitly recognizes that overheads that are incremental to LNP are properly recoverable within the bounds of 251(e)(2). While recognizing the validity of recovering incremental overheads, however, the Commission rejects the use of general loading factors to account for these legitimately recoverable costs. Although it is not entirely clear whether, in its reference to *general* overhead loading factors, the Commission intends in this paragraph to prohibit the use of any and all loading factors to account for incremental overheads, it appears that it does so intend. The purpose of this paper is to explain why it is appropriate and reasonable to use cost allocations and overhead loading factors to account for and recover all of the direct, incremental costs caused by the implementation of LNP, including incremental overhead costs. Moreover, the failure to recover these incremental costs will violate the competitive neutrality mandate of the Telecommunications Act Section 251(e)(2) and the Commission's policy as articulated in its Orders. In particular, I will make the following points:

- Overhead-type costs increase with the size and scope of the organization; thus, an undertaking of the magnitude of implementing LNP functionality will have a significant *incremental* impact on overhead costs.

- Overhead costs that are incremental to LNP are directly attributable to LNP and should be recoverable.

- It is not economically feasible to identify and measure all incremental overhead-type costs without the use of factors and allocations.

- If the Commission's prohibition on incumbent LECs' using general overhead loading factors to account for incremental overheads was interpreted to preclude the use of any factors or allocations to identify incremental overheads, that interpretation would disparately affect incumbent LECs' ability to compete in both the product market and the capital market, and violates both elements of the Commission's two-pronged test for competitive neutrality.

III. IN A LARGE MULTIPRODUCT ORGANIZATION, MOST OVERHEAD COSTS ARE NOT COMMON COSTS

Economic theory classifies the different kinds of costs in multiproduct firms into the following categories:

Incremental costs of a new service, product, or functionality are costs that are incurred only on behalf of that service, are justified by that service alone, and would not be incurred had the service not been introduced. Incremental costs can comprise usage-sensitive costs, such as the costs of making a particular database query, as well as non-usage-sensitive or fixed costs. The switch software upgrades necessary to provide LNP are an example of non-usage-sensitive investment that is incremental to LNP. Because the incremental costs of a service would be entirely avoided if the service had not been introduced, and are justified by that service alone, all incremental costs are directly attributable to the service. This includes costs that are incurred to operationalize the service at the functional level, as well as incremental costs that are typically classified as overhead for accounting purposes. As an example of the latter category, if the addition of LNP functionality requires additional human resources personnel to support the additional functional personnel employed to implement LNP, those human resources costs would be directly attributable (incremental) overhead costs of LNP.

In a multiproduct firm, there are typically synergies or scope economies at many levels in the provision of the different services or products the firm offers. In order to account for these synergies, economic theory defines two other types of costs:

Shared costs of a multiproduct firm are fixed costs that the company incurs in order to provide a subset of (more than one) products, but that do not support the production of *all* services offered by the firm. These costs would be completely avoided if the entire set of services these costs support had not been developed or were no longer offered, but would have to be incurred if any one (or a subset of these) were offered. An example of a shared cost would be a generic upgrade to software for digital switching, which supports an array of vertical features of the switch. This investment does not support all services of the firm; for example, it does not support the local network access service.

The **common costs** of a multiproduct firm are fixed costs incurred on behalf of *all* services offered by the firm. These costs would be avoided only if the company shuts down entirely. The elimination of any one service or subset of services would not eliminate the truly common costs. Truly common costs would be avoided only if the firm stopped operating.[3]

Neither shared nor common costs, by definition, are volume sensitive. Any volume-sensitive cost would be avoided if the service were not offered. Therefore, by definition, volume-sensitive costs would be incremental, not shared or common. Moreover, common costs, by definition, do not vary with the scope of the firm. That is, true common costs will not be affected by the number of services the firm produces. Common costs must be incurred in order to produce the first unit of any service produced by the firm, and will not increase as the firm increases in scale or scope.

Examples of true common costs are the top management of a firm, such as (some of the costs of) the CEO. The costs of a minimal level of top management exist independent of the scale and scope of the company, because in order to produce the first unit of output of the first service offered, a company needs a CEO The common costs of the CEO will only be avoided if the company stops producing *all* of its services.

It is critical to distinguish, however, between common or shared costs on the one hand, and what are, in reality, incremental costs. As I have stated, common costs, such as a minimal level of top management, must be incurred independent of the scope and size of the firm. However, even the costs associated with the CEO are not entirely common. Management functions have to grow as the company grows in scale or scope. The fact is that the CEO of a relatively small company, such as Advanced Micro Devices (AMD), which produces microprocessors, does not earn the same amount as does the CEO of Intel. The CEO of a large multiproduct company will likely have greater responsibilities

[3] For further explanation see William J. Baumol and J. Gregory Sidak, *Toward Competition in Local Telephony* (Cambridge: MIT Press), 1994, pages 69-70.

and typically has more extensive experience and expertise. Consequently, CEO compensation varies with the scale and scope of the company. The growth in compensation costs that are associated with the growth in the scale and scope of the firm are not "common costs," but rather incremental costs to the new services offered. Hence, even what is typically treated as a common cost for accounting purposes is largely, in fact, an incremental cost. Indeed, in a large and complex organization, most overhead costs are properly incremental, and truly common (and shared) costs are typically small. This is because truly common costs are limited to those that would be incurred by a single-product firm to produce a minimal level of output. Truly shared costs are only those that would be incurred by a subset of all the firm's products, at their minimal level of output. All other costs are incremental to either the scale of production or to additional products.

Empirical studies have measured the effect of the scale of the firm on the growth of certain costs, such as the compensation of the CEO. For instance, economic research indicates that the elasticity of CEO compensation with respect to firm size tends to be around 0.25-0.3.[4] This means that for each 1% increase in firm size (measured by revenues or number of employees), CEO compensation increases by .25 to .3 percent. Conversely, if the firm size declines by 1%, the CEO's compensation would decline by only .25 to .3 percent. While the specific numerical estimates are not critical here, the point is that statistical analysis does demonstrate a positive relationship between this overhead cost and firm size. This positive relationship is likely to hold for many centralized services and functions.

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4 Rose, N. and Shepard, A. "Firm Diversification and CEO Compensation: Managerial Ability or Executive Entrenchment?," *RAND Journal of Economics*, Vol. 28, No. 3, Autumn 1997.

Roberts, D.R. "A General Theory of Executive Compensation Based on Statistically Tested Propositions," *Quarterly Journal of Economics*, Vol. 70, May 1956.

IV. AMERITECH'S LNP COST STUDY DOES NOT AND CANNOT IDENTIFY ALL OF THE GENUINELY INCREMENTAL OVERHEAD COSTS OF LNP

The implementation of LNP by Ameritech is a huge undertaking. Regional implementation will involve several business units, dozens of different work groups, hundreds of employees, and hundreds of different job functions, and will ultimately cost hundreds of millions of dollars. More specifically, LNP required Ameritech to install brand new hardware and software throughout its network. LNP also required Ameritech to substantially upgrade existing network hardware, software, and databases as well as the systems that support the network. One example of such a support system involves the Signal Transfer Points (STPs) within Ameritech's network that process and route all SS7 signaling messages, including LNP queries. The introduction of LNP and the query service necessitated a more complex number screening process involving all of the dialed digits rather than just the NPA and NXX to determine the proper call routing. In order to create adequate capacity to perform this function, Ameritech had to increase memory (software and hardware) within its STPs to handle the additional instructions required to route calls correctly. In addition, the STP translation provisioning system (an operational support system) required new hardware and software to accommodate the additional digits. New and upgraded hardware and software must be integrated and tested. Once installed and tested, the hardware, software and support systems must also be maintained.

In addition to these activities that enable and maintain the network functionality required to provide LNP, there is also a wide variety of incremental administrative "overhead" activities performed by Ameritech that specifically support LNP. Examples include the development and maintenance of billing systems, ordering systems, and provisioning systems; the development and maintenance of field methods and procedures; network planning and engineering; developing and delivering training; product management; budget development and tracking; technical and regulatory support; and coordination with external industry participants (e.g., equipment vendors, Bellcore, CLECs, IXCs).

I have reviewed Ameritech's LNP cost study. The study specifically identifies all of the hardware, software and operational support system costs required to provide LNP. It also specifically identifies all of the incremental administrative "overhead" costs discussed above. However, it does not, and reasonably could not, specifically identify many of the other incremental administrative (overhead) costs that Ameritech will incur in providing LNP. For example, the administrative overhead costs specifically identified in the Ameritech study were calculated by estimating the employee hours required to perform the various tasks and multiplying those hours by the appropriate directly assigned labor rate. The study estimated that 1,856 productive hours of salary grade 4 (SG4) time would be required in 1997, 1998, and 1999 to accomplish the external industry coordination function. A directly assigned labor rate includes operational wages, benefits, paid absence, wage loadings for administrative clerical personnel, and if applicable, motor vehicles, tools and miscellaneous expenses. However, directly assigned labor rates do not include the salary costs of general supervision (supervision above the local level), general supervision benefits, or general supervision support costs. Under Ameritech's incremental cost methodology, costs of the general supervision incremental to a service were not specifically identified for each and every service because higher levels of management are responsible for such a wide variety of products, services, and activities. This fact does not mean that a portion of general supervision cost is not directly incremental to LNP, however. Adding a significant new service or functionality will require additional general supervision. These additional costs are directly caused by (i.e., are incremental to) the new service or functionality.

In the LNP query cost study, Ameritech accounted for these additional incremental administrative overhead costs by applying a standard overhead factor derived from ARMIS data as it has done, and which the Commission has permitted,[5] for virtually all interstate services. In the LNP monthly charge cost study, the overhead factor that Ameritech intends to use was derived from a rigorous analysis of total company shared and common costs performed by the Arthur Andersen firm, which I discuss in more

[5] See, *Open Network Architecture Tariffs of Bell Operating Companies*, CC Docket No. 92-91, Order, released, December 15, 1993 ¶ 50 n.93.

Federal Communications Commission, *In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996. Interconnection between Local Exchange Carriers and Commercial Mobile Radio Service Providers. First Report and Order.* CC Docket No. 96-98, August 8, 1996, ¶ 696.

detail below. This approach is consistent with the Commission's previous conclusion in the context of unbundled network elements: "Certain common costs are incurred in the provision of network elements. As discussed above, some of these costs are common to only a subset of the elements or services provided by incumbent LECs. Such costs shall be allocated to that subset, and should then be allocated among the individual elements or services in that subset, to the greatest possible extent."[6] These standard overhead factors are also designed to account for other incremental overhead expenses such as human resources and other support expenses like furniture and desktop computers.

In theory, the ideal way to recover incremental overheads would be to measure them all specifically. However, it is inherently infeasible and uneconomical to attempt to specifically identify and measure many types of incremental overheads. For this reason, I divide incremental overheads into three categories.

First, some incremental overheads can be readily identified, such as additional product managers, service managers and planners specifically assigned to the new product or service. These types of incremental overheads have been specifically identified in Ameritech's LNP cost study. For example, these overheads would include the development and maintenance of billing systems, and the network planning and engineering, among the other overheads discussed previously.

Second, some incremental overheads are inherently difficult to specifically identify, such as the previously discussed general supervision costs, as well as other incremental overheads arising from legal and regulatory activities, and administrative building space requirements. For example, it is inherently difficult to specifically determine which incremental general supervision and legal and regulatory resources have already been expended and will be required in the future because of LNP implementation. Several lawyers and regulatory personnel may spend dozens of hours working on this pleading this week but may be engaged in totally different issues involving other services next week. Although legal and regulatory costs are clearly incremental to LNP

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[6] Federal Communications Commission, *In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996. Interconnection between Local Exchange*

implementation, specific time requirements are driven in large part by unpredictable filing requirements beyond Ameritech's control. Moreover, there are literally thousands of administrative and overhead-type functions that may be impacted by LNP. It is simply not economically feasible to specifically study each such function.

Third, other incremental overheads are inherently impossible to specifically identify, and can only be identified statistically. Costs such as CEO salary clearly increase with firm size and scope on average, a fact which is verified by empirical studies such as those previously cited. However, there is no way to examine any books of account or engage in any study of functional units at Ameritech to determine how much of Mr. Notebaert's salary is responsive to an increase in the overall scale and scope of Ameritech. The only way to estimate these incremental costs would be to perform a statistical study of similarly situated executives, or a time-series study of Ameritech executive compensation, that relates firm size and scope to compensation. Other costs, such as general accounting, general counsel, government relations, and administrative facilities fall into this category as well.

In addition to the inherent infeasibility of specifically identifying all incremental overheads as prescribed by the Commission, the fact that the provision of local number portability is a brand new functionality would render an attempt to specifically identify and quantify all incremental overhead costs speculative, at best. Such a study would involve considerable uncertainty as to what the incremental overhead costs will be in the future. For these reasons, as an alternative to performing an expensive, detailed, and yet still speculative cost study, Ameritech instead relied on standard loading factors to account for some of the incremental overhead costs attributable to LNP. This approach is a common industry practice and is routinely used as a practical method to assign a reasonable portion of overhead costs to individual services.

The alternative to this approach is to undertake a detailed study of the costs associated with the provision of a service or functionality. I have been a close observer of detailed

Carriers and Commercial Mobile Radio Service Providers. First Report and Order. CC Docket No. 96-98, August 8, 1996, ¶ 694.

studies of overhead costs, such as a study of shared and common costs performed for Ameritech by Arthur Andersen. The experience made quite clear that requiring a carrier to specifically account for all incremental overheads directly caused by a specific service or functionality would be a ludicrously massive undertaking. The purpose of the Andersen study was to examine forward-looking shared and common costs incurred in the provision of unbundled network elements ("UNEs") and identify which were actually incremental to specific products or services. This study required significant resources and was extremely complicated, but it did not even attempt to identify all incremental overheads. The first version of the Andersen study, which addressed only the four Ameritech organizations involved in the wholesale provision of UNEs, took 2,200 person-hours to perform over a period of 3 months. In addition, because of time and data constraints, the study did not identify all capital-related overheads and only attributed incremental shared and common costs to UNEs in aggregate, rather than to individual UNEs. Moreover, the Andersen study still relied in part on standard allocators to attribute incremental overhead costs to UNEs.

Subsequently, Andersen analyzed retail shared and common costs for one Ameritech state. This study took roughly twice as long as the UNE shared and common cost study and again relied to a great extent on standard factors and allocators to reasonably account for all incremental overheads and assign them to retail services. More specifically, according to that study, an average loading factor of more than 58% would need to be applied to the direct product-specific costs identified by Ameritech in its cost studies to account for all overhead costs that were examined in the study. About 21% of the costs identified by Andersen were incremental product family shared costs, which are incremental overhead costs that could be directly identified and assigned to individual product families without using any allocation factors. The remaining 79% of the overhead costs could not be directly identified and quantified as incremental to a service or product family using Andersen's methods. Some of this cost pool is presumably truly common and would not be legitimately recoverable from the LNP monthly charge. However, as I have explained in Section III, the fraction of truly common costs is likely to be quite small; conversely, a large share of overhead costs that are categorized as shared and common are actually incremental. Denying recovery of the entire pool of costs would clearly result in under-recovery of incremental costs. Hence, assuming that the incremental overheads for LNP would be similar to those studied by Andersen, Ameritech would be denied recovery of up to 79% of its legitimate LNP incremental overhead costs. That 79% translates to around $40 million per year (before adjusting for truly common costs).

Attempting to do a study of this magnitude specifically for LNP similarly would be very costly in terms of time and money – and would still require extensive use of standard factors and allocators to account for all incremental overheads. The use of standard factors and allocators in telecommunications cost studies is virtually unavoidable because of the thousands of administrative and overhead functions and support assets involved, and the many synergies at many levels of the firm that come into play in the provision of all the different services telecommunications companies typically offer. The existence of synergies at a given level of the organization does not obviate the fact that a portion of the costs at that level are truly incremental to a new service, but it renders the specific identification of the costs genuinely complex. For example, Ameritech has about 68,000 employees. Clearly it would be impossible to interview each one to identify that individual's function and whether it relates to LNP. Those 68,000 employees fall under 35,000 responsibility codes. A responsibility code represents a functional activity in a business unit or legal entity. Again, it would not be economically feasible to examine each responsibility code to determine whether it is caused by LNP. Moreover, even if one were to attempt such an analysis, it would only address labor costs and none of the investments and expenses of the firm.

By studying functions at a higher level of aggregation, the Anderson study pared the number of responsibility codes to 1,481. However, examining costs at that level and making inferences about which costs are incremental to what service ultimately required extensive use of allocation factors, as I stated earlier. Simply put, Ameritech (and any large-scale LEC) cannot practically identify and itemize all of the incremental overhead costs it will incur as a result of LNP implementation. Hence, it is not realistic or appropriate to prohibit the use of factors and allocations to account for at least some incremental overhead and instead require LECs to produce detailed studies that specifically identify all incremental overheads. Such a requirement will surely lead to significant under-recovery of these costs.

Finally, to the extent that the Commission intends to prohibit the use of all overhead allocation factors for LNP, the Commission's position in this case demonstrates a basic misunderstanding of how cost studies are performed, and makes no sense, especially in view of past practices. First, the use of overhead loading factors to recover overheads is an approximation to the specific identification of incremental overheads. Past Commission practice has permitted the use of such factors in cost studies for virtually all interstate services. These factors reflect averages, and telecommunications cost studies rely on averages to a great extent. For example, maintenance expenses are typically estimated by the application of a maintenance factor. The maintenance factor represents an estimate of the relationship between maintenance expenses and the investment dollars in each plant account. If Ameritech typically incurs, say, $5 million of digital switching maintenance expense for each $100 million of digital switching investment, the maintenance factor applied to investment in cost studies of services using digital switching is 5%. Extending the Commission's position on incremental overheads to incremental maintenance expenses would require LECs to attempt to identify, for each new service using digital switching, the incremental maintenance hours and materials that particular service imposed on a digital switching network providing hundreds of services. Such a study would be time consuming, expensive, and speculative at best. Similarly, incremental cost studies rely on the application of numerous other factors to estimate other incremental costs. These include factors for power, floorspace, installation, engineering, supporting structures (pole investment to aerial cable investment and conduit investment to underground cable investment), ad valorem taxes, supplies, etc. These factors all represent averages and are all designed to recover reasonable estimates of legitimate cost elements. However, if the Commission prohibited the use of these other standard factors in incremental cost studies, it would force Ameritech to attempt to measure with specificity the exact amount of incremental power consumed and floorspace occupied by each new service in order to recover power and floorspace costs. Eventually, the most significant cost of service would be the cost of performing the cost study.

If the Commission is concerned that the application of standard overhead factors will result in double-recovery, prohibiting the application of such factors and guaranteeing significant under-recovery of actual incremental costs is not the answer. Rather, the Commission should investigate the particular overhead factors used in the LNP studies and make a determination as to their reasonableness. Because the Commission and the industry have so much experience with the development and application of overhead loading factors, such a review could be accomplished in a reasonable time at a reasonable cost. Conversely, a review of the complex study required by the Commission's approach would be extremely time-consuming and expensive, and would not necessarily result in a better answer or outcome.

V. PROHIBITING THE USE OF OVERHEAD LOADING FACTORS IS NOT COMPETITIVELY NEUTRAL

By prohibiting the use of loading factors to approximate incremental overheads, the Commission effectively precludes recovery of a significant share of incremental overheads. All incremental costs of LNP, including incremental overheads, are specifically caused by implementing number portability. Hence, these costs are direct costs and pursuant to the Commission's LNP Cost Recovery Order may be recovered in the number portability monthly charge and query service prices. Moreover, to preclude recovery of some of the bona fide incremental costs of providing number portability would violate the Commission's definition of competitive neutrality. Indeed, it would violate both prongs of the Commission's "two-pronged test" for competitive neutrality.

The Commission interprets competitive neutrality as requiring that "the cost of number portability borne by each carrier does not affect significantly any carrier's ability to compete with other carriers for customers in the marketplace." The Commission specifies a two-part test to determine whether the cost allocation mechanism is competitively neutral. The first prong of the test is that the way carriers bear the costs of number portability "must not give one service provider an appreciable, incremental cost advantage over another service provider when competing for a specific subscriber." The second prong of the Commission's two-pronged test of competitive neutrality is that the way costs are borne "must not disparately affect the ability of competing service providers to earn a normal return."[7]

I interpret the first prong to refer to the incremental cost of attracting and serving an additional customer, at the margin. I will call this the incremental-customer costs. By this first requirement, the mechanism by which costs are borne by providers in the market cannot significantly distort the relative incremental-customer costs of the carriers. However, because the maximum LNP monthly charge for incumbent LECs is to be set on the basis of the carrier's reported incremental costs of providing number portability, the monthly charge would obviously be understated if the carrier is not permitted to account for all of its incremental costs.

I am aware that the Commission's standard for competitive neutrality apparently does not require that all costs be accounted for in the monthly charge in order for competitive neutrality to hold. Indeed, the Commission's language in the order implies that it is only necessary that the recovery mechanism not distort the *relative* costs that are imposed on consumers. For example, suppose that because of the Commission's prohibition on use of overhead loading factors, LEC 1 is able to account for only 70% of its incremental LNP costs, and therefore the subscriber monthly charge reflects only 70% of the actual incremental costs. Then apparently the Commission would consider this situation competitively neutral as long as LEC 2, and all other providers, could only account for 70% of their incremental costs.

Whatever the merits or demerits of this theory may be, precluding the use of overhead loading factors will not lead to this "neutral" outcome. The Commission should be aware that precluding the use of loading factors to account for incremental overheads does not have a symmetric impact across carriers. It does not symmetrically affect all carriers that

[7] Federal Communications Commission, *In the Matter of Telephone Number Portability, Third Report and Order*, CC Docket No. 95-116. May 12, 1998, ¶¶ 52-53.

are required to justify their LNP charges with a cost study (namely, incumbent LECs)[8] vis à vis each other, nor does it symmetrically affect carriers that must submit a cost study, vis à vis those that do not.

There are two reasons that the Commission's ruling would not symmetrically affect incumbent LECs vis à vis each other. First, each carrier uses a different cost study methodology, each of which captures direct costs differently. Some studies identify certain costs directly, while others treat them as factors. For example, as discussed previously, some carriers like Ameritech use directly assigned labor rates in cost studies and then rely on overhead factors to estimate other incremental cost elements, such as general supervision. Other carriers use fully assigned labor rates, which include loadings for general supervision. Such studies would have little or no overheads to assign via a general loading factor because they would have been assigned via a labor rate loading instead. Although both methodologies should theoretically provide the same result, the carrier using the former would be unable to recover its incremental general supervision costs under the Commission's ruling.

Second, the differences across carriers in their ability to specifically identify incremental overheads issue not only from the differences in cost methodologies *per se*, but because differences in firm size and structure affect which categories of costs are more or less easily captured directly in a cost study. For example, in a small provider with only a few hundred employees, many more of the incremental costs can be directly identified because, first, smaller organizations are flatter[9] and therefore have fewer overheads; and second, incremental overheads are more readily identified in simpler organizations. The fact that smaller organizations are flatter in structure (i.e., have fewer layers of hierarchy) and simpler is not an indication that they are more efficient than larger, more complex organizations. Rather, economic theory indicates that firms are larger where economies

8 Federal Communications Commission, *In the Matter of Telephone Number Portability, Third Report and Order*, CC Docket No. 95-116. May 12, 1998, ¶¶ 135 - 136.

9 Rosen, Sherwin. "Authority, Control, and the Distribution of Earnings," *The Bell Journal of Economics*, Vol. 13, No. 2, Autumn 1982.

Calvo, G.A. and Wellisz, S. "Hierarchy, Ability, and Income Distribution," *Journal of Political Economy*, Vol. 87, No. 5, 1979.

of scale and/or scope induce a large efficient firm size. However, when firms are large, efficient internal monitoring and management requires more hierarchical layers. Hence, large firms will have deeper hierarchies and more complex organization, while not necessarily being more or less efficient than smaller rivals. A larger percentage of the incremental costs of a large firm may, therefore, be of a type that is typically categorized as administrative overhead. Because having a deep hierarchy can be an efficient and appropriate organizational structure, it is not valid to impose arbitrary cost recovery rules that disparately impact the ability to recover the incremental overheads in such organizations.

As a result of these two effects, the LNP Cost Recovery Order's apparent prohibition against the use of overhead loading factors would not only induce significant under-recovery of costs that are truly incremental to LNP, but would have a disparate effect on under-recovery across incumbent LECs, many of whom are pursuing strategies to enter each other's markets. This would translate into significantly distorted customer monthly charges, which would directly violate the first prong of the two-prong test. If customers face monthly charges that differ significantly from one carrier to another, and the difference is artificially induced by an arbitrary rule that disparately affects carriers' abilities to recover all of their incremental costs, then the cost rule disparately affects carriers' incremental-customer costs and therefore fails the competitive neutrality test.

I have explained why the Commission's ruling violates the first prong of the two-pronged test by disparately affecting incumbent LECs' ability to compete for customers vis à vis each other. By preventing incumbent LECs from recovering a significant share of their incremental costs of providing LNP, the Commission also violates the first prong of its test for competitive neutrality by disparately affecting incumbent LECs' ability to compete for customers vis à vis CLECs.

Under the cost recovery mechanism established by the Commission, all non-regulated competitors in the market have the freedom to recover all of their LNP costs in the form of a monthly charge, without justifying the charge at all.[10] Hence, one possible strategy that a CLEC could adopt would be to overcharge on the LNP monthly charge, and reduce the advertised service price for, say, basic local service, correspondingly. The service prices that customers would see advertised in the market in competition with Ameritech's and other providers' prices would be the net-of-monthly charge price, while the price they would ultimately pay would include the monthly charge. Ameritech would be unable to match the competitor's advertised price, because Ameritech's LNP charge is capped by the Commission's determination of its incremental LNP costs. For example, if Ameritech were charging $15 for local service and $1 for the LNP monthly charge, a CLEC competitor could advertise a rate of $14 but charge $2 for the LNP monthly charge.

This would be an effective strategy if customers respond primarily to advertised prices and are less well informed and, therefore, less responsive to unadvertised bill add-ons such as the LNP monthly charge. To the extend that customers are vulnerable to manipulation of this sort, the asymmetry in the Commission's rules bestows a significant marketing advantage on the CLECs relative to the incumbent LECs. The Commission's mindset in establishing the rule as it did presumably stemmed from the assumption that competition will drive *down* the LNP monthly charge. What the Commission apparently did not recognize is that strategic behavior may instead drive it *up* as part of a shell game in which CLECs decrease their advertised prices, hide the increased monthly charge in the fine print, and blame it on the FCC. I have observed similar behavior in the cellular industry, in which carriers charge a per-call or per-minute surcharge that they call an "interconnection fee." Advertising materials, however, de-emphasize this fee and compare competitors' prices with their own prices net of the fee.

The competitive distortion imposed by the Commission's asymmetric rules governing recovery of the costs of LNP is an artifact of the requirement that incumbent LECs must justify their charges, yet CLECs need not.[11] It is not directly caused by the

[10] Federal Communications Commission, *In the Matter of Telephone Number Portability, Third Report and Order*, CC Docket No. 95-116. May 12, 1998, ¶ 136.

[11] Federal Communications Commission, *In the Matter of Telephone Number Portability, Third Report and Order*, CC Docket No. 95-116. May 12, 1998, ¶¶ 135-136.

Commission's exclusion of overhead loadings. However, the limitation precluding only the incumbent LEC from recovering all of its costs significantly exacerbates the potential for competitive distortion, because it caps the LNP monthly charge at an inappropriate, non-remunerative level.

The second prong of the Commission's two-prong test for competitive neutrality refers to the effect of the cost recovery mechanism on the ability of carriers to earn a normal return. Precluding incumbent LECs from recovering a significant share of incremental costs cannot satisfy a reasonable interpretation of that second criterion. The reason, again, is that CLECs have no limitation on the LNP monthly charge that they can impose in order to recover their costs, while the incumbent LEC is capped at a value that only partially captures its true incremental costs. This may indeed have the perverse effect of imposing a burden on *CLECs*, as well as incumbent LECs, because it limits the extent to which they can recover their total costs and still compete in the market. To the extent that customers do consider the LNP monthly charge as part of the price when they make their choice among carriers, customers will choose the carrier with the lowest total price, which is the sum of the service rates plus the monthly charge. If the incumbent LEC's monthly charge is below incremental cost, the CLECs will be forced to under-recover as well simply to remain competitive, and their ability to earn a normal profit will be impeded, as will the incumbent LECs'.

The burden is asymmetric, however, because as long as customers do not fully recognize the monthly charge in deciding among carriers, CLECs can choose to recover their full cost by charging a higher monthly charge, while hiding the monthly charge in their marketing materials or targeting less price-sensitive customers, as I explained earlier. In this way they can recover their full incremental costs and have the normal market opportunity to earn a competitive return, while the incumbent LEC does not have that opportunity. This directly violates the second prong of the Commission's test.

The Commission should further be aware of an additional reason that precluding full recovery of incremental costs via the monthly charge is poor public policy and violates competitive neutrality. If the full incremental costs of LNP are not recovered from the

LNP monthly charge, the realities of state-level regulation may preclude their recovery at all. If they are recovered, the cost is most likely to be borne in the least competitive products and areas, because services in the most competitive areas are most likely to already be priced at market-based rates. Hence, if cost recovery is permitted at all, those customers who have the least effective or least attractive competitive alternatives to the incumbent LEC's services will be most likely to bear the costs that are not recovered in the monthly charge. But these are precisely the customers who benefit the least from LNP! Customers who have few or no attractive alternatives to the incumbent LEC have little use or demand for LNP. Establishing a cost recovery mechanism that may bias the burden toward these customers is particularly perverse and inappropriate.

If, on the other hand, the unrecovered costs are not borne by increases in prices in some product or service market, they will be borne by shareholders in the form of lower returns to capital. By decreasing Ameritech's return to capital, Ameritech's ability to raise capital in the financial market is impeded, because investors will direct their resources to alternative investments with higher (risk-adjusted) expected returns. Ameritech's unregulated competitors would sustain no such impact, however, because they are permitted to recover their LNP costs without regulatory constraint. Imposing a handicap on incumbent LECs relative to CLECs in the competitive market for financial capital is not competitively neutral. In particular, it again violates the second prong of the Commission's two-part test for competitive neutrality. By selectively precluding incumbent LECs from recovering legitimate incremental costs of LNP, and not providing incumbent LECs with an alternative mechanism to recover them, the Commission disparately impedes incumbent LECs' ability to earn a normal return in the market.

VI. RECOVERY OF TRULY COMMON COSTS SHOULD BE PERMITTED FOR QUERY SERVICE COSTS

The Commission has ruled that it is appropriate in principle (if not in practice) to recover incremental overheads in its LNP charges.[12] However, apparently the Commission disapproves of the recovery of truly common costs from LNP charges. In this ruling, the Commission has failed to distinguish between the proper economic cost recovery for the industry-wide LNP capability that is to be recovered via the end-user monthly charge, and the proper economic cost recovery for the query service that some carriers may choose to use. In the former case, I agree with the Commission that it is, at least arguably, inappropriate to recover cost that are truly common in the monthly charge (as opposed to incremental overheads, which I have explained are properly recoverable in any case). With respect to the query service, however, the Commission has erred in precluding any recovery of common costs in addition to incremental overheads. Although truly common costs are likely to be quite small in an organization the size and scope of Ameritech (because, as I explained earlier, most overheads are actually incremental to a service or volume sensitive if properly accounted for), in principle a share of truly common costs should be recoverable from the query service. The difference between the query service and the LNP monthly charge is that the query service is clearly a *service*. In contrast, the functionality that enables LNP is arguably not a service *per se*, because each consumer will pay a share of it whether or not she directly benefits from or exercises the LNP option herself. Hence, under the Commission's mechanism of cost recovery, the LNP functionality is more appropriately viewed as a cost of providing telecommunications services. Ameritech's query service, in contrast, is a service that will be subscribed to, or not, only by those carriers who choose to engage Ameritech to provide that service for them. They will be charged on a basis that reflects their usage (such as on a per-query basis), so that standard principles of cost-causation are observed. Hence, the query service, as a service, should bear a share of truly common costs, as do other competitive and regulated services. Doing so benefits all customers by

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[12] Federal Communications Commission, *In the Matter of Telephone Number Portability, Third Report and Order*, CC Docket No. 95-116. May 12, 1998, ¶ 74.

increasing the economies of scale of the organization and thereby lowering the share of common cost borne by customers of the other services provided by the company.

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